

What is claimed as the invention is:

1. In an audio processing circuit including a plurality of band pass filters and a summation circuit
5 for combining the outputs of the band pass filters, the improvement comprising:

a multiplex circuit coupled between the band pass filters and the summation circuit; and

10 control means coupled to the multiplex circuit for coupling a subset of said band pass filters to said summation circuit.

2. The audio processing circuit as set forth in claim 1 wherein said band pass filters have a pass band
15 of one half octave or less.

3. A method for providing full duplex operation in a two channel audio system wherein each channel includes a plurality of band pass filters, said method comprising
20 the steps of:

applying a first input signal to a first channel and a second input signal to a second channel;

providing an indication of the magnitude of the signal in each band in each channel; and

25 allocating the signals in the first channel to a first channel output and the signals in the second channel to a second channel output in accordance with the magnitudes of the signals in each band.

30 4. The method as set forth in claim 3 wherein said allocating step includes the steps of:

(a) comparing the magnitude of the signal in a band in the first channel with the magnitude of the signal in a corresponding band in the second channel;

35 (b) coupling the signal with the greater magnitude to the channel output for that band;

- (c) suppressing the signal with the lesser magnitude from the channel output for that band; and
(d) repeating steps (a) and (b) for each pair of bands.

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5. The method as set forth in claim 3 wherein said allocating step includes the steps of:

- (a) finding the band having the largest signal;
(b) coupling the signal to the channel output for
10 that band and blocking the signal in the corresponding band in the other channel from the other channel output;
(c) going to the other channel;
(d) repeating steps (a), (b), and (c) for each next largest signal from the remaining bands.

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6. The method as set forth in claim 3 wherein said allocating step includes the steps of:

- finding the band with the largest signal;
coupling the signal from that band and from
20 alternate bands in the same channel to the channel output for those bands;
blocking the corresponding bands in the other channel from the channel output for those bands; and
coupling the remaining bands in the other channel to
25 the channel output for those bands.

7. The method as set forth in claim 3 wherein said allocating step includes the steps of:

- determining the duration of a signal exceeding a
30 threshold; and
not allocating the signal if the duration of the signal exceeds a predetermined period.

8. In a telephone having a first channel including a microphone and a line output and a second channel including a line input and a speaker output, wherein each

channel includes a plurality of band pass filters, the improvement comprising:

5 a first multiplex circuit in the first channel for coupling at least some of said band pass filters to said line output;

a second multiplex circuit in the second channel for coupling at least some of said band pass filters to said speaker output; and

10 a controller coupled to said first multiplex circuit and said second multiplex circuit for initially coupling complementary subsets of filters to the respective outputs.

15 9. The telephone as set forth in claim 8 wherein said controller includes an amplitude detector for each band and controls said first multiplex circuit and said second multiplex circuit in accordance with the amplitudes of the signals in each band.

20 10. The telephone as set forth in claim 9 wherein said controller compares the magnitude of the signal in each band in the first channel with the magnitude of the signal in a corresponding band in the second channel and directs the multiplex circuit to couple the signal with the greater magnitude to the output for the channel.

~~11.~~ A method for processing an electrical signal, said method comprising the steps of:

30 applying the electrical signal to a plurality of band pass filters to produce a plurality of filtered output signals;

providing an indication of the duration of each filtered output signal; and

35 attenuating a filtered output signal if the duration of the filtered output signal exceeds a predetermined period.

12. The method as set forth in claim 11,
wherein the providing step includes the step of
providing an indication of the magnitude of each filtered
5 output signal and

wherein the attenuating step includes attenuating a
filtered output signal if the magnitude of the filtered
output signal exceeds a predetermined amount and the
duration of the filtered output signal exceeds a
10 predetermined period.